OBSTETRICS AND PERINATOLOGY

PLASMA OPIOIDS IN PARTURIENTS AFTER EPIDURAL ANESTHESIA


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Introduction. Maternal levels of ACTH, cortisol, and catecholamines rise during labor and delivery due to physical and psychological stress. These responses may be blocked by epidural anesthesia, which has been shown to decrease catecholamine levels during labor. Recently beta-endorphin, and endogenous opioid peptide has been used as a marker of stress. Plasma beta-endorphin levels rise through labor with the highest levels occurring during the second and third stages. The present study examined the effect of epidural analgesia on plasma beta-endorphin and enkephalin (total plasma opioid) activity during labor and delivery.

Methods. Ten women at term with no medical or obstetrical complication and who elected to have epidural labor analgesia were studied. The study was approved by the Human Subjects Committee, and informed consents were obtained. All patients were given continuous epidural analgesia with bupivacaine 0.25% at 4-6 cm cervical dilation after fluid loading with 500 ml of lactated Ringers solution. Five ml of blood was drawn through an indwelling intravenous catheter immediately prior to and after initial epidural injection, two hours after the epidural, during the second stage, and immediately after delivery. Blood was mixed immediately with EDTA-Bacitracin solution. Samples were spun within one hour to plasma and stored at -80°C. Plasma beta-endorphin levels were determined by radioimmunoassay (New England Nuclear), and enkephalin-like activities were determined by a radioreceptor assay. Data was analyzed by one-way analysis of variance with Duncan's Multiple Range used for a posteriori comparison of means. Significance was defined at p < 0.05.

Results. The ten women studied had the following descriptive characteristics (mean ± SEM): age 23 ± 3 years, weight 72 ± 5 kg, height 163 ± 4 cm. Eight were primigravida and 2 multigravida (2nd child) child). There was no incidence of treatable hypotension postepidural. Plasma Beta-endorphin levels fell significantly post-epidural, at 2 hours, and in the third stage. At the second stage, no significant change in plasma beta-endorphin from pre-epidural levels was observed (p > 0.05).

Discussion. Recent reports have shown that plasma beta-endorphin rises significantly in the second stage of labor in patients with no analgesia. The present study demonstrates the ability of labor epidurals to blunt this response. This probably occurs by mechanisms similar to those causing decreases in catecholamines during labor with epidurals, i.e., lowering of stress and pain of the second and third stages of labor. Total peripheral opioid activity did not change significantly. This is most likely due to the greater variability of the biological radioreceptor assay.

Conclusion. Plasma beta-endorphin response has been shown to be related to physiological and psychological stress. This study illustrates another humoral stress marker blunted by epidural anesthesia in the parturient.

References.